

WORKING PAPER

Approved For Release 2001/08/07 : CIA-RDP78B04747A001600050007-3

SECRET

26 December 1963

MEMORANDUM FOR: Assistant for Plans and Development

THROUGH: Chief, Development Branch

SUBJECT: Obtaining Collateral Data to Evaluate Photographic Systems

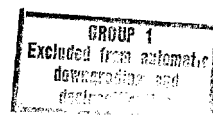
The present method of systems evaluation of aerial photography is primarily based upon results of laboratory determined parameters. To reproduce a truly operational evaluation of any system, whether orbital or sub-orbital, the conditions existing on the ground at the instant of photographic exposure should be available. Since volumes of data have been produced in the laboratory for systems evaluation and although these contribute to the knowledge of what can be expected under certain conditions, no evaluation has been made under equivalent conditions as proposed in this study. Such variables which would serve to establish camera system capability are as follows:

- a. Spectral reflectance
- b. Sun angle
 - (1) Season
 - (2) Geographic location
- c. Gray scale equivalent of targets
- d. Light intensity
- e. Altitude
- f. Barometric pressure
- g. Temperature
- h. Humidity
- i. Atmospheric conditions (haze, smoke, clouds, wind velocity, etc.)

DECLASS REVIEW BY NIMA / DoD

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j. Dimensions (object sizes and shape)

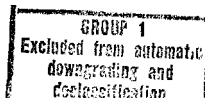
This type of information would be similar to the test that was initiated by Wright-Patterson AFB for photography performed throughout most of the atmosphere using foreshortened grey scale (3 steps) resolution targets with associated instrumentation. It is not suggested that only such aforementioned targets are to be used but that almost any object recorded on film can render the necessary reflectance, grey scale and dimensional characteristics needed for the study. Examples would be sidewalks, roofs of buildings, fields, etc. In some of the latest missions it would have been possible to set up this type of research program in cities and environs covered to measure the desired data. This program, when associated with orbital missions, would provide valuable data which could be applied to processing, film evaluation and to further research into the development of emulsions and camera systems. High altitude and orbital missions could be scheduled using the same types of film, cameras, etc. to facilitate correlation of "ground truth" statistics obtained. This data then, could be compared to laboratory results to ascertain parameters which would be taken into consideration when missions are scheduled. As the situation now exists, the only unknown characteristics are terrestrial factors which can be determined from this type of program.

In order to ascertain the information content from this type of program, it will be necessary to have a photointerpretation group review and equate the image characteristics for existing environmental and and systems parameters. From this study, the significance of the various

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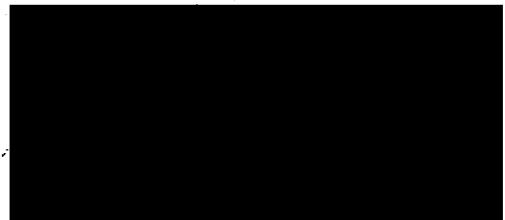
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factors can be evaluated and a pre-determination of expected photographic quality can be made. The extensive study of photography and environmental conditions will, however, necessitate a long range program with orbital photography, high altitude photography and environmental condition factors recorded simultaneously.

Before this program can be advocated, it is essential that a survey be made of the efforts that have already been made by the various governmental and commercial agencies. The programs initiated by Westover, Rome and Wright-Patterson should be investigated and, in addition, that pursued by the [REDACTED] should yield an excellent background for any attempt for orbital studies. It is realized that this study may take the cooperation of NPIC, the Air Force, and possibly commercial concerns to accomplish a task that is this encompassing.

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GROUP 1
Excluded from automatic
downgrading and
declassification

STATINTL

MEMORANDUM FOR: [REDACTED]

*Would like to send this forward
for comments concerning feasibility
and concurrence.*

STATINTL

*Wasn't known
given to [REDACTED] OSA on 16 Jan 64*

26 Dec 1963

STATINTL

FORM NO. 101 REPLACES FORM 10-101
1 AUG 54 WHICH MAY BE USED.

(47)

STATINTL

MEMORANDUM FOR: [REDACTED]

*I am very much in
accord with the spirit
of this proposal - I believe
a project should be initiated
to obtain necessary coordina-
tion to determine specific
nature and 2 Jan 64
responsible administrator
(DATE)*

FORM NO. 101 REPLACES FORM 10-101
1 AUG 54 WHICH MAY BE USED.

(47)